

FCC Test Report

FCC 47 CFR FCC Part 15 Subpart B

Product Name : GSM 850/1900
GPRS\WIFI\BT Mobile Phone
Model No. : A1650
FCC ID : T38PCD1650

Prepared By: : Inventec Appliances(Pudong) Corporation
Address: : No.789 Pu Xing Road,Shanghai,PRC
Date of Receipt : 2012.06.29
Date of Test : 2012.07.02-2012.07.04
Report No. : 20120629FCC-A



Test Report Certification

Date of Issue : Jul.10.2012

Report No. : 20120629FCC-A

Product Name : GSM 850/1900
GPRS\WIFI\BT Mobile Phone

Model No. : A1650

Trade Name : Claro; PCD

Applicant : Cellon Communications Technology (Shenzhen) Co.,Ltd.
: 13/F, Skyworth C Building, Gaoxin S.Ave1, Hi-Tech Industrial Park,

Address : Nanshan District,

Standard : FCC 47 CFR FCC Part 15 Subpart B

Classification : JBP

Test Result : Complied

The Test Results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of
IAC regulatory Laboratory

Documented By :  , Jul.10.2012
Judy Ge/Engineer

Tested By :  , Jul.10.2012
Alice Lee/Engineer

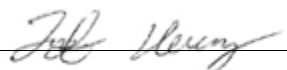
Approved By :  , Jul.10.2012
Jeff Huang/Director of Operations

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SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.107	7.2.2	AC Conducted Emission	< 15.107 limits < RSS-Gen table 2 limits	PASS	Under limit 6 dB
3.2	15.109	7.2.3.2	Radiated Emission	< 15.109 limits or < RSS-Gen table 1 limits (Section 6)	PASS	Under limit 6dB

1. GENERAL INFORMATION

1.1 Applicant

Company Name: Cellon Communications Technology (Shenzhen) Co.,Ltd.

Address: 13/F, Skyworth C Building, Gaoxin S.Ave1, Hi-Tech Industrial Park, Nanshan District,

1.2 Manufacturer

Company Name: Cellon Communications Technology (Shenzhen) Co.,Ltd.

Address: 13/F, Skyworth C Building, Gaoxin S.Ave1, Hi-Tech Industrial Park, Nanshan District,

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	GSM 850/1900 GPRS\WIFI\BT Mobile Phone
Brand Name	Claro; PCD
Model Name	A1650
FCC ID	T38PCD1650
HW Version	P3
SW Version	A1650_02.04_6D0109_71021_ST_024_024

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of JBP.
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC 47 CFR FCC Part 15 Subpart B
- ANSI C63.4-2003

Remark:

All test items were verified and recorded according to the standards and without any deviation during the test.

2. Test Configuration of Equipment Under Test

2.1 Test Modes

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Abbreviations:

- EMI AC: AC conducted emissions
- EMI RE $\geq$ 1G: EUT radiated emissions $\geq$ 1GHz
- EMI RE $<$ 1G: EUT radiated emissions $<$ 1GHz

Test Item	Function Type
AC Conducted Emission	Mode 1: GSM 850 Idle + Bluetooth Idle + Battery + Earphone + Adapter

Test Item	Function Type
RadiatedEmissions $<$ 1GHz	Mode2:GSM 850Idle+ Bluetooth Idle + Battery + Earphone + USB cable +Notebook

Test Item	Function Type
RadiatedEmissions $>$ 1GHz	Mode2:GSM 850Idle+ Bluetooth Idle + Battery + Earphone + USB cable +Notebook

2.2 Testing Environment

Items	Ambient Temperature	Relative Humidity	Test Distance
Normal Condition	22~24°C	35~60%	3m

3. Test Result

3.1 Test of AC Conducted Emission Measurement

3.1.1 Limits of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

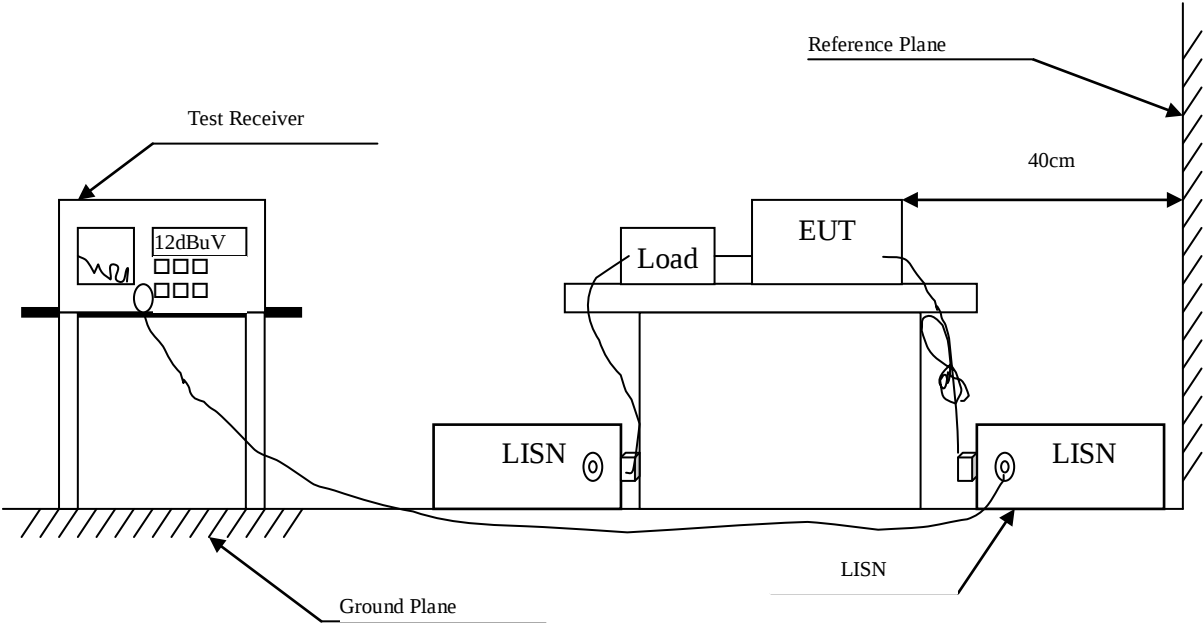
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedure

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (RBW=9kHz and VBW=30kHz) with Maximum Hold Mode for QP limit measurement.
9. Set the test-receiver system to Average Detect Function and specified bandwidth (RBW=9kHz and VBW=30kHz) with Maximum Hold Mode for QP limit measurement.

3.1.4 Test Setup

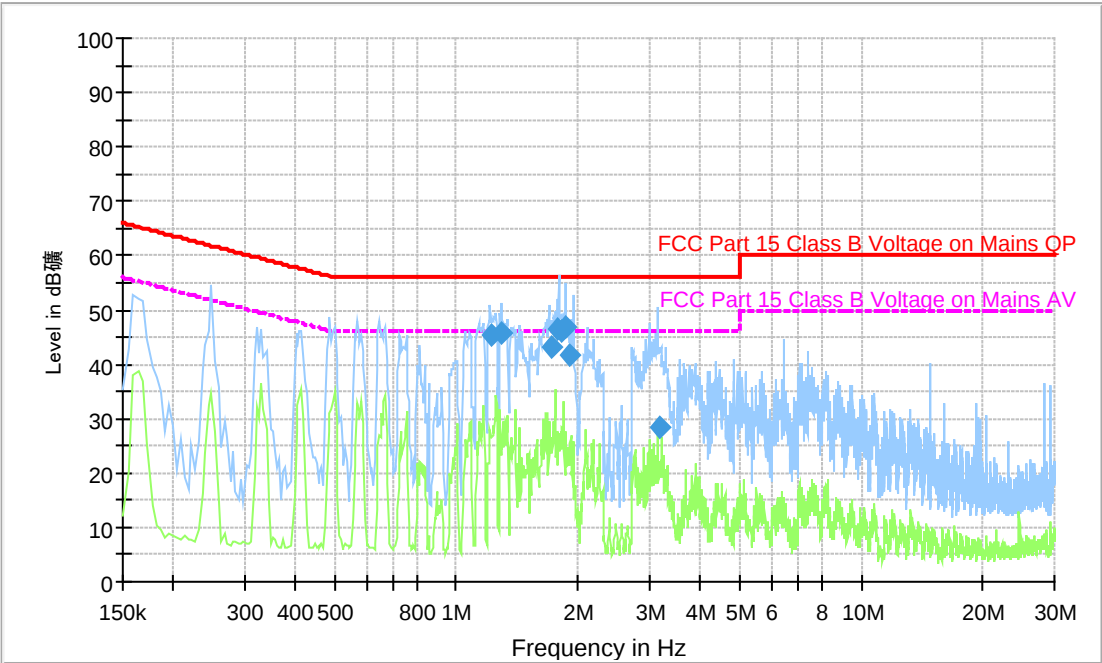


3.1.5 Test Result of AC Conducted Emission

Test Voltage:120V/60Hz

Mode 1: GSM 850 Idle + Bluetooth Idle + Battery + Earphone+ Adapter +Neutral

EMI Auto Test CISPR22

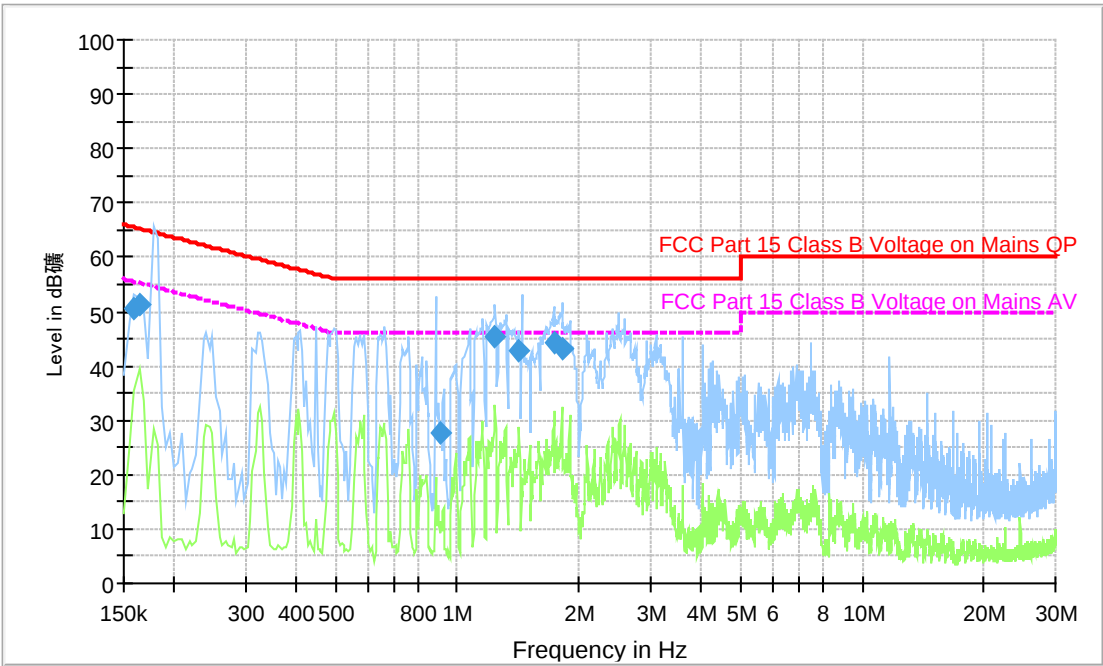


Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
1.216500	45.3	10.0	9.000	On	N	9.7	10.7	56.0
1.297500	45.8	10.0	9.000	On	N	9.6	10.2	56.0
1.711500	43.0	10.0	9.000	On	N	9.6	13.0	56.0
1.779000	46.4	10.0	9.000	On	N	9.6	9.6	56.0
1.824000	46.0	10.0	9.000	On	N	9.6	10.0	56.0
1.864500	46.8	10.0	9.000	On	N	9.5	9.2	56.0
1.905000	41.6	10.0	9.000	On	N	9.5	14.4	56.0
3.178500	28.3	10.0	9.000	On	N	9.6	27.7	56.0

Mode 1: GSM 850 Idle + Bluetooth Idle + Battery + Earphone+ Adapter + Line

EMI Auto Test CISPR22



Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.159000	50.4	10.0	9.000	On	L1	9.4	15.1	65.5
0.163500	51.2	10.0	9.000	On	L1	9.4	14.1	65.3
0.906000	27.8	10.0	9.000	On	L1	9.7	28.2	56.0
1.239000	45.5	10.0	9.000	On	L1	9.7	10.5	56.0
1.423500	42.8	10.0	9.000	On	L1	9.7	13.2	56.0
1.734000	44.3	10.0	9.000	On	L1	9.7	11.7	56.0
1.819500	43.1	10.0	9.000	On	L1	9.7	12.9	56.0

3.2 Test of Radiated Emission Measurement

3.2.1 Limit of Radiated Emission

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.2.2 Measuring Instruments

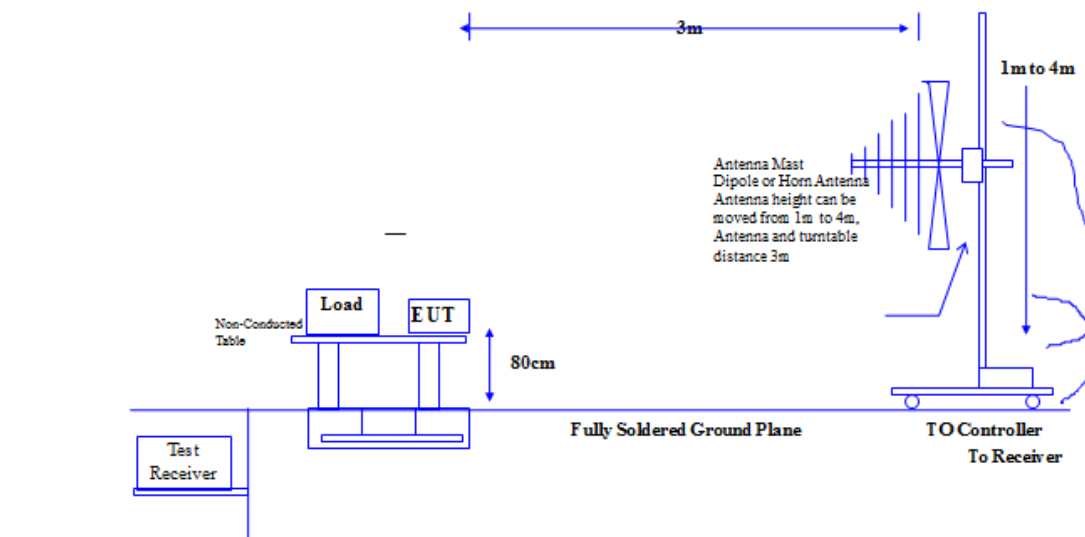
See list of measuring instruments of this test report.

3.2.3 Test Procedure

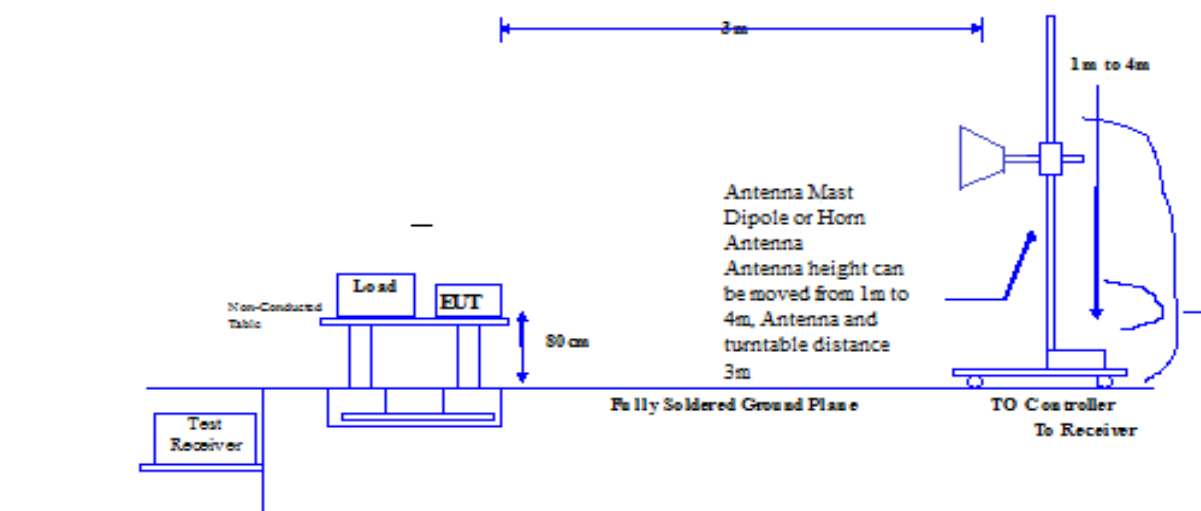
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth (RBW=120kHz and VBW=300kHz with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported
8. Emission level (dBuV/m) = 20 log Emission level (uV/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

3.2.4 Test Setup

30MHz~1GHz



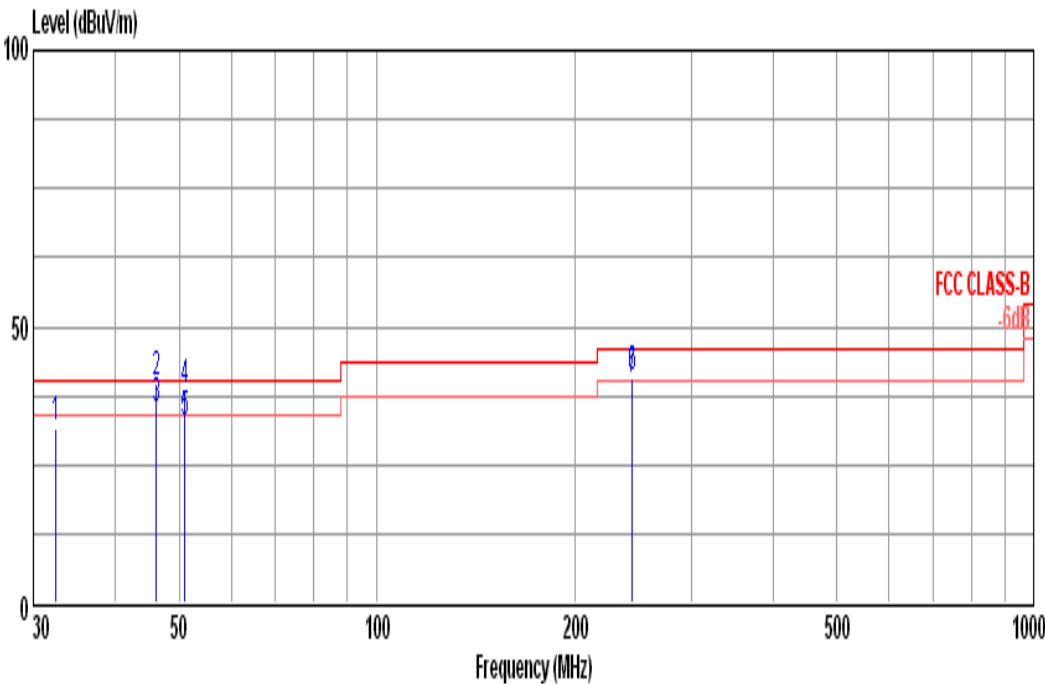
Above 1GHz



3.2.5 Test Result of Radiated Emission

Test Distance : 3m

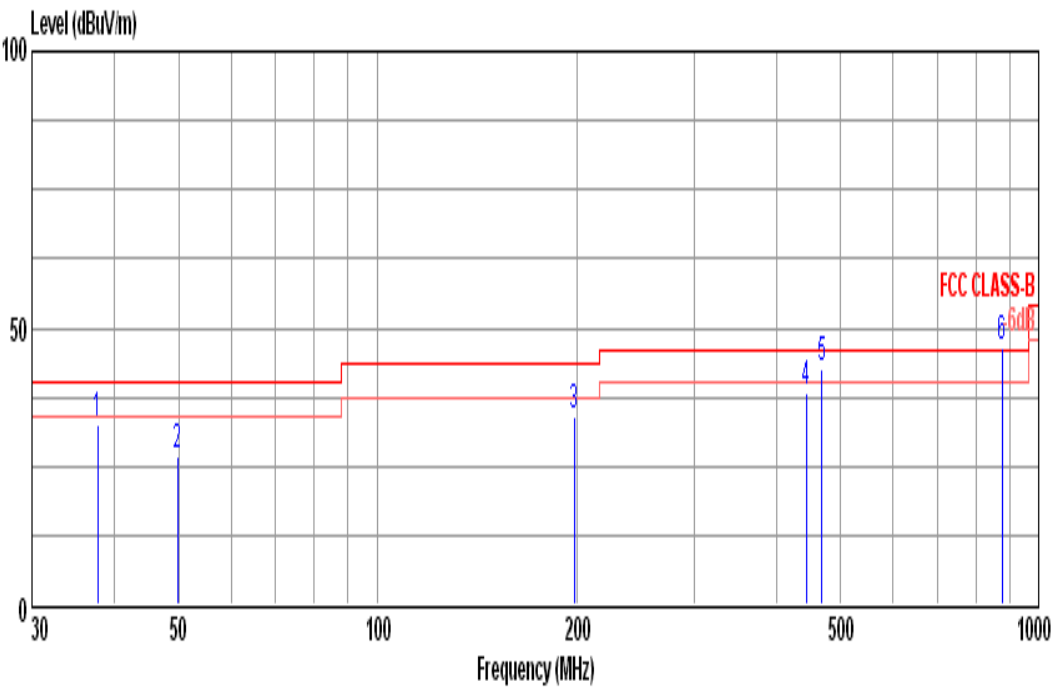
Mode2: GSM 850Idle+ Bluetooth Idle + Battery + Earphone + USB cable+Notebook+Vertical



Condition : FCC CLASS-B 3m HL562 VERTICAL
: RBW:120.000KHz VBW:300.000KHz SWT:Auto
eui : GSM MOBILE PHONE
memo : A1650

		Over	Limit	Antenna	Cable	Preamp	Aux	Read		
Freq Remark		Level	Limit	Line	Factor	Loss	Factor	Factor	Level	Factor
MHz		dBuV/m	dB	dBuV/m	dB/m	dB	dB	dB	dBuV	dB/m
1	32.48 Peak	31.70	-8.30	40.00	17.84	1.36	0.00	0.00	12.50	19.20
2	46.12 Peak	39.50	-0.50	40.00	10.36	1.09	0.00	0.00	28.05	11.45
3	46.12 QP	34.70	-5.30	40.00	10.36	1.09	0.00	0.00	23.25	11.45
4	50.99 Peak	38.40	-1.60	40.00	7.23	1.19	0.00	0.00	29.98	8.42
5	50.99 QP	32.60	-7.40	40.00	7.23	1.19	0.00	0.00	24.18	8.42
6	244.17 Peak	40.70	-5.30	46.00	9.20	2.62	0.00	0.00	28.88	11.82
7	244.17 QP	40.10	-5.90	46.00	9.20	2.62	0.00	0.00	28.28	11.82

Mode2: GSM 850Idle+ Bluetooth Idle + Battery + Earphone + USB cable+Notebook+Horizontal



Condition : FCC CLASS-B 3m HL562 HORIZONTAL
: RBW:120.000KHz VBW:300.000KHz SWT:Auto
cut : GSM MOBILE PHONE

memo : A1630

		Over	Limit	Antenna	Cable	Preamp	Aux	Read		
Freq Remark		Level	Limit	Line	Factor	Loss	Factor	Factor	Level	Factor
MHz		dBuV/m	dB	dBuV/m	dB/m	dB	dB	dB	dBuV	dB/m
1	37.68 Peak	32.49	-7.51	40.00	15.20	1.09	0.00	0.00	16.20	16.29
2	49.80 Peak	26.79	-13.21	40.00	7.93	1.15	0.00	0.00	17.71	9.08
3	197.97 QP	33.80	-9.70	43.50	7.23	2.31	0.00	0.00	24.26	9.54
4	443.97 QP	38.50	-7.50	46.00	14.42	3.37	0.00	0.00	20.71	17.79
5	468.01 QP	42.40	-3.60	46.00	14.90	3.42	0.00	0.00	24.08	18.32
6	876.40 Peak	46.20	0.20	46.00	20.32	4.94	0.00	0.00	20.94	25.26

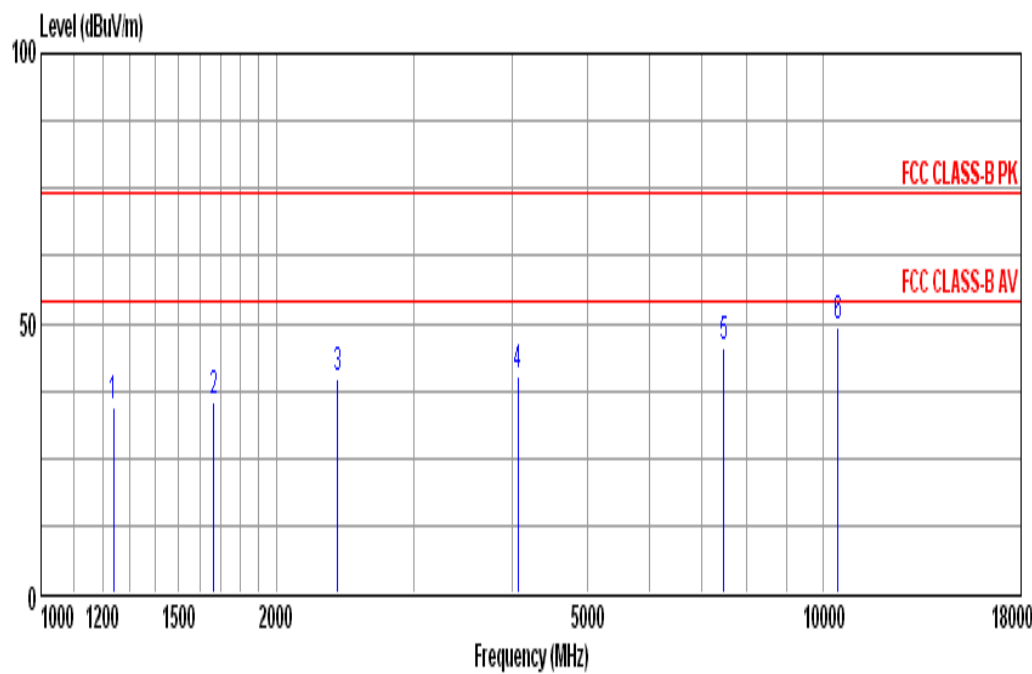
Remark: #6 is communication signal which can be ignored.

Radiated Emission above 1GHz

Test Distance : 3m

Mode2: GSM 850Idle+ Bluetooth Idle + Battery + Earphone + USB cable+Notebook+Vertical

1GHz~18GHz

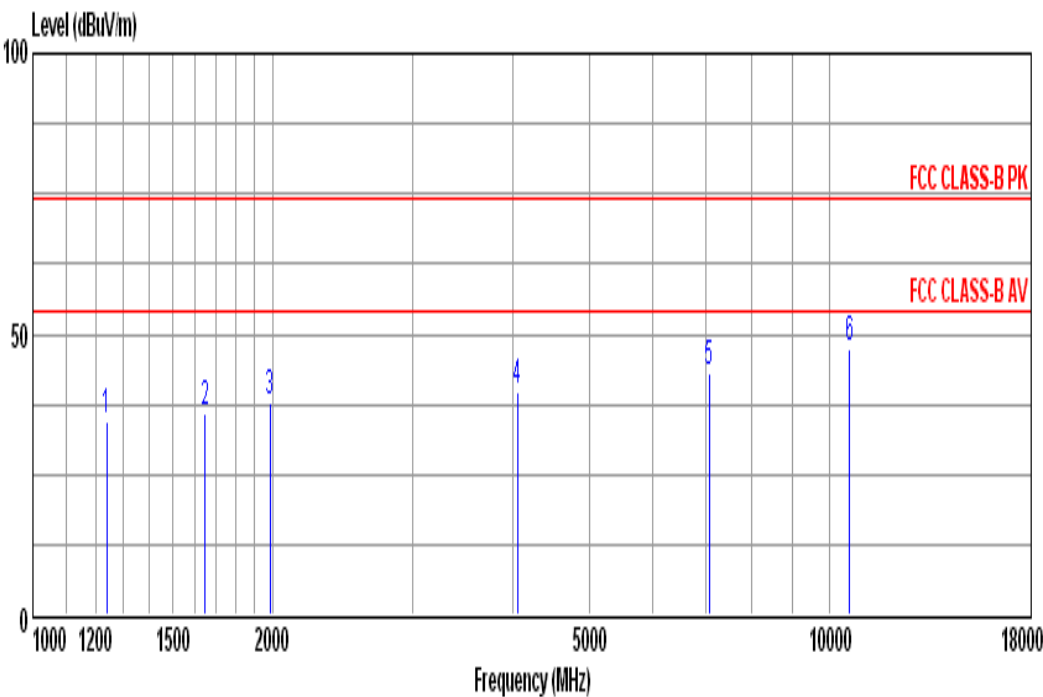


Condition : FCC CLASS-B PK 3m HF906 VERTICAL
: REW:1000.000KHz VEW:1000.000KHz SWT:Auto
cut : GSM MOBILE PHONE
memo : A1650

		Level	Over Limit	Antenna Line	Factor	Cable Loss	Preamp Factor	Aux Factor	Read Level	Factor
Freq Remark		dBuV/m	dB	dBuV/m	dB/m	dB	dB	dB	dBuV	dB/m
MHz										
1	1238.00 Peak	34.67	-39.33	74.00	24.15	3.34	27.30	0.00	34.48	0.19
2	1663.00 Peak	35.21	-38.79	74.00	25.62	3.77	27.02	0.00	32.84	2.37
3	2394.00 Peak	39.72	-34.28	74.00	27.58	4.41	25.27	0.00	33.00	6.72
4	4077.00 Peak	40.10	-33.90	74.00	31.58	5.49	26.94	0.00	29.97	10.13
5	7477.00 Peak	45.37	-28.63	74.00	35.58	7.97	27.14	0.00	28.96	16.41
6	10469.00 Peak	49.27	-24.73	74.00	37.10	9.45	26.27	0.00	28.99	20.28

Mode 2: GSM 850Idle+ Bluetooth Idle + Battery + Earphone + USB cable+Notebook+Horizontal

1GHz~18GHz



Condition :FCC CLASS-B PK 3m HF906 HORIZONTAL
:RBW:1000.000KHz VBW:1000.000KHz SWT:Auto
eut :GSM MOBILE PHONE
memo :A1650

		Over	Limit	Antenna	Cable	Preamp	Aux	Read		
Freq	Remark	Level	Limit	Line	Factor	Loss	Factor	Factor	Level	Factor
MHz		dBuV/m	dB	dBuV/m	dB/m	dB	dB	dB	dBuV	dB/m
1	1238.00 Peak	34.63	-39.37	74.00	24.15	3.34	27.30	0.00	34.44	0.19
2	1646.00 Peak	35.65	-38.35	74.00	25.54	3.67	27.05	0.00	33.49	2.16
3	1986.00 Peak	38.02	-35.98	74.00	27.03	4.22	26.07	0.00	32.84	5.18
4	4060.00 Peak	39.83	-34.17	74.00	31.59	5.40	26.94	0.00	29.78	10.05
5	7069.00 Peak	43.23	-30.77	74.00	35.16	8.24	26.93	0.00	26.76	16.47
6	10605.00 Peak	47.17	-26.83	74.00	37.22	10.64	26.37	0.00	25.68	21.49

4. List of Measuring Equipment

No	Instrument/Ancillary	Provider	Type/Model	Cal. Date
01	Base Station	Agilent	E5515C	2011.12.14
02	Spectrum Analyzer	R&S	FSP30(9kHz~30GHz)	2011.07.19
03	Antenna	Schwarzbeck	VULB9165(30M-1G)	2011.11.09
04	Antenna	R&S	HF906(1G-18G)	2011.08.10
05	Antenna	Schwarzbeck	BBHA 9170 (15G-26.5G)	2011.11.09
06	High Pass Filter	R&S	System Integrated	2011.11.14
07	Thermal chamber	Hitachi	EC- 85MHP	2011.12.25
08	Pre-Amplifier	Agilent	83006A(0.01GHz-26.5GHz)	2011.8.16
09	Pre-Amplifier	Agilent	83006A(0.01GHz-26.5GHz)	2011.8.16
10	Helical Antenna	ETS	3102 (1G-10G)	NCR
11	Power Meter	R&S	NRP(10MHz~8GHz)	2011.12.05
12	Relay Switch	R&S	TS-REMI	NCR

5 Ancillary Equipment List

Product	Manufacturer	Model No.	Serial No.	FCC approval	Power Cord
Notebook PC	Dell	PP32LA	FQWSN2X	FCC DOC	N/A
Adapter (NB)	Dell	DA90PE3-00	ADP-90VH D	FCC DOC	M/N A-1750-09 PA -1750-09
LCD Monitor	HP	GTM002	3CQ84343SG	FCC DOC	Unshielded 1.8m
Mouse	Lenovo	M20	OL08226936	FCC DOC	Unshielded 1.0m

6 Uncertainty Evaluation

6.1 Uncertainty of Radiated Spurious Emission evaluation (30MHz~1GHz)

Contribution		Probability Distribution	Partition Coefficient	Uncertainty (ui)	
				Horizontal 30MHz-1GHz	Vertical 30MHz-1GHz
Cable Loss Calibration	U01	Standard deviation	2.00	0.04	0.04
Sine wave voltage accuracy of Spectrum analyzer	U02	Triangle	2.45	0.82	0.82
Impulse response of spectrum analyzer	U03	Triangle	2.45	0.61	0.61
Pulse repetition rate of spectrum analyzer	U04	Triangle	2.45	0.61	0.61
Spectrum analyzer noise level	U05	Standard deviation	2.00	0.25	0.25
Measurement of the signal path mismatch	U06	U-Shape	1.41	0.69	0.69
Free-space antenna factor	U07	Standard deviation	2.00	0.50	0.50
Antenna Factor Interpolation for Frequency	U08	Rectangular	1.73	0.17	0.17
Antenna factor with height in the correlation	U09	Rectangular	1.73	0.17	0.17
Measurement antenna and the absorbing material in the image of the mutual coupling effect	U10	Rectangular	1.73	0.58	0.58
Antenna phase center variation	U11	Rectangular	1.73	0.42	0.42
Antenna cross polarization response	U12	Rectangular	1.73	0.52	0.52
Antenna imbalance	U13	Rectangular	1.73	0.52	0.52
Test distance error	U14	Triangle	2.45	0.46	0.56
Test distance error	U15	Rectangular	1.73	0.17	0.17
Desktop terrain clearance variation	U16	Standard deviation	2.00	0.05	0.05
Random uncertainty	U17	Standard deviation	1.00	0.18	0.03
Combined Standard Uncertainty $U_c(y)$	U_c	Standard deviation	1.00	1.89	1.91
Measuring Uncertainty for a level of Confidence of 95% ($U = 2U_c(y)$)	$U = k U_c$	Standard deviation	k	3.79	3.82

6.2 Uncertainty of Radiated Spurious Emission evaluation (1GHz~25GHz)

Contribution		Probability Distribution	Partition Coefficient	Uncertainty (ui)	
				Horizontal 30MHz-1GHz	Vertical 30MHz-1GHz
Cable Loss Calibration	U01	Standard deviation	2	0.04	0.04
Sine wave voltage accuracy of Spectrum analyzer	U02	Triangle	2.45	0.82	0.82
Impulse response of spectrum analyzer	U03	Triangle	2.45	0.61	0.61
Pulse repetition rate of spectrum analyzer	U04	Triangle	2.45	0.61	0.61
Spectrum analyzer noise level	U05	Standard deviation	2.00	0.25	0.25
Measurement of the signal path mismatch	U06	U-Shape	1.41	0.69	0.69
Free-space antenna factor	U07	Standard deviation	2.00	0.50	0.50
Antenna Factor Interpolation for Frequency	U08	Rectangular	1.73	0.173	0.173
Antenna factor with height in the correlation	U09	Rectangular	1.73	NA	NA
Measurement antenna and the absorbing material in the image of the mutual coupling effect	U10	Rectangular	1.73	0.58	0.58
Antenna phase center variation	U11	Rectangular	1.73	0.13	0.13
Antenna cross polarization response	U12	Rectangular	1.73	0.52	0.52
Antenna imbalance	U13	Rectangular	1.73	0.52	0.52
Test distance error	U14	Triangle	2.45	1.48	1.55
Test distance error	U15	Rectangular	1.73	0.17	0.17
Desktop terrain clearance variation	U16	Standard deviation	2.00	0.05	0.05
Random uncertainty	U17	Standard deviation	1.00	0.01	0.08
Combined Standard Uncertainty $U_c(y)$	U_c	Standard deviation	1.00	2.31	2.36
Measuring Uncertainty for a level of Confidence of 95% ($U=2U_c(y)$)	$U=k U_c$	Standard deviation	K	4.63	4.71